

REMARKS

The present application was filed on October 6, 2000 with claims 1-20.

Claims 1-20 are currently pending in the application. Claims 1, 10, 19 and 20 are the independent claims.

Applicants initially note that the present application claims the priority of U.S. provisional application Serial No. 60/165,802 filed November 16, 1999. The Office Action fails to provide an appropriate acknowledgment of this domestic priority claim.

In the Office Action, the Examiner rejected claims 1-18 and 20 under U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,014,694 (hereinafter “Aharoni”), and rejected claim 19 under U.S.C. §103(a) as being unpatentable over Aharoni in view of U.S. Patent No. 6,460,153 (hereinafter “Chou”). The Examiner also objected to claims 1, 10, 19 and 20 due to informalities.

In this response, Applicants amend the specification to update related application information and to correct minor errors of a typographical nature, traverse the §102(e) and §103(a) rejections, and amend claims 1, 10, 19 and 20. Applicants respectfully request reconsideration of the present application in view of the above amendments and the following remarks.

With regard to the claim objections, the amendments to claims 1, 10, 19 and 20 are believed to overcome the objections, and the objections should therefore be withdrawn.

With regard to the §102(e) rejection, Applicants note that the Manual of Patent Examining Procedure (MPEP), Eight Edition, August 2001, §2131, specifies that a given claim is anticipated “only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference,” citing Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Moreover, MPEP §2131 indicates that the cited reference must show the “identical invention . . . in as complete detail as is contained in the . . . claim,” citing Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

For the reasons identified below, Applicants submit that the Examiner has failed to establish anticipation of at least independent claims 1, 10, 19 and 20 by the Aharoni reference.

The present invention as set forth in claim 1 is directed to a method of processing a video signal for transmission over a heterogeneous network. The method includes steps which recite

coding the video signal in a progressive video coder, transmitting the progressive coded video bit stream over a first part of the heterogeneous network at a first bit rate, and selectively transmitting one or more portions of the progressive coded video bit stream from the first part of the heterogenous network to a second part of the heterogenous network. The coding step further specifies that the progressive coded video bit stream is configured to be decodable at any one of a series of increasing bit rates up to a maximum bit rate, depending on which of a number of corresponding portions of the progressive coded video bit stream are received by a decoder, and that each of the series of increasing bit rates produces progressively better reconstructed video quality at an output of the decoder. The selectively transmitting step further specifies that the one or more portions are associated with a second one of the bit rates lower than the first bit rate, with the particular portions and the second bit rate being selected based at least in part on one or more of: (i) an error detected in the transmission over the first part of the heterogeneous network; and (ii) a characteristic of the second part of the heterogeneous network.

An illustrative example of a progressive coded video bit stream of a type falling within the above-described limitations of claim 1 is shown in FIG. 3 of the drawings, and is described as follows in the specification at page 10, lines 13-19:

FIG. 3 shows a progressive coded video bit stream 300 generated by progressive video coder 110 from a given group of frames 310. The group of frames may represent, e.g., a group of pictures (GOP) as the term is used in conventional video coding standards, or any other type of video signal or image sequence. The bit stream 300 may be viewed as including a number of different portions, with a maximum target bit rate of 384 kbps achieved when all portions are received, and intermediate bit rates of 64 kbps, 128 kbps and 256 kbps being achieved if only first, second or third portions, respectively, are received.

The progressive coded video bit stream 300 in this example thus includes four distinct portions, as illustrated in the figure, with each of the portions corresponding generally to a different bit rate achievable upon receipt of that portion and any preceding portions in a decoder.

The Examiner argues that each and every limitation of claim 1 as described above is disclosed in the Aharoni reference. Applicants respectfully disagree. As indicated above, the present invention as set forth in claim 1 specifically calls for coding a video signal in a progressive video coder so as to generate a progressive coded video bit stream configured to be decodable at any one of a series of increasing bit rates up to a maximum bit rate, depending on which of a number of corresponding portions of the progressive coded video bit stream are received by a decoder. Applicants initially note that the Aharoni reference makes no explicit reference to progressive video coding. In fact, it appears from a computer word search carried out by the undersigned, using an HTML version of the Aharoni reference from the USPTO database, that the reference does not use the term “progressive” anywhere therein.

The Examiner nonetheless states that Aharoni at column 8, lines 52-64, column 9, lines 52-65, and column 10, lines 50-65, discloses the claim limitations relating to progressive video coding. However, these portions of Aharoni do not teach or suggest a progressive video coder which generates a progressive coded video bit stream configured to be decodable at any one of a series of increasing bit rates up to a maximum bit rate, as specifically set forth in claim 1. Instead, Aharoni teaches to generate a video source file in which every frame, including key frames, P frames and B frames, is composed of data from five different video data levels. See column 10, lines 21-37. This is not a type of fully embedded or partitioned progressive video coding as that term is described by Applicants in their specification.

Moreover, the video source file as described in Aharoni is not transmitted in the particular manner claimed by Applicants. Instead, Aharoni at column 10, lines 42-49, teaches that the video information is transmitted from a server to a client in the following manner, with emphasis supplied:

Each frame, however, contains video data for each of the five quality resolution levels. However, for each GOP, the video client only receives data corresponding to a single level. The video server determines for each GOP the appropriate level of data to send to the client. Once a video quality level is chosen by the video server, it is used for the entire GOP. Adjacent GOPs can be comprised of different level data. However, data of different levels cannot be sent within a GOP.

This disadvantageous need for server-based control in Aharoni is completely eliminated in the present invention through the use of progressive video coding as claimed. Applicants submit that the Aharoni reference, by teaching such server-based control of video information transmission, and emphasizing that a client "only receives data corresponding to a single level," not only fails to teach or suggest the claimed invention, it actively teaches away from it.

Accordingly, since Aharoni fails to teach or suggest "each and every element" of independent claim 1 in "as complete detail as is contained in the . . . claim," as required by MPEP §2131 for a proper anticipation rejection, claim 1 is not anticipated by Aharoni.

Independent claims 10, 19 and 20 include limitations similar to those of claim 1, and are believed allowable for substantially the same reasons identified above with regard to claim 1.

Dependent claims 2-9 and 11-18 are believed allowable for at least the reasons identified above with regard to their respective independent claims. Moreover, certain of these claims are believed to define additional separately-patentable subject matter over Aharoni and the other art of record.

With regard to the §103(a) rejection over Aharoni and Chou, Applicants submit that the Chou reference fails to overcome the fundamental deficiency of the Aharoni reference as applied to independent claim 1. The §103(a) rejection is therefore believed to be improper and should be withdrawn.

In view of the above, Applicants believe that claims 1-20 as amended are in condition for allowance, and respectfully request the withdrawal of the §102(e) and §103(a) rejections.

Respectfully submitted,



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